

ITRI 614 EC

INFORMATION SYSTEM ENGINEERING 1

Faculty of Natural Sciences

Study guide compiled by: Prof HM Huisman, Prof Lynette Drevin, Prof Neels Kruger and Dr JT Janse van Rensburg

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North-West University



It all starts here

- Ranked in the top 5% of universities globally by the QS-rankings
- Contribute the second largest of number of graduates annually to the labour market

Dit begin alles hier

- As een van die top 5% universiteite wêreldwyd deur die QS-ranglys aangewys
- Lewer jaarliks die tweede-meeste graduandi aan die arbeidsmark

Gotlhe go simolola fano

- Re beilwe mo gare ga diyunibesiti tse 5% tse di kwa godimo go ya ka peo ya maemo ya QS
- Ngwaga le ngwaga go abelwa palo ya bobedi ka bogolo ya badiri mo maketeng ya badiri

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Module information

Module code	ITRI 614
Module credits	12 (120 hours)
Module name	Information System Engineering I
Name of lecturer(s)	JT Janse van Rensburg / CJ Kruger
Office telephone	016 910 3259 / 018
Email address	jt.jansevanrensburg@nwu.ac.za / neels.kruger@nwu.ac.za
Building and Office nr	B8-G15 Vanderbijlpark Campus / G-08 Potchefstroom Campus
Consulting hours	By appointment
Contact periods	1 Theory
Assumed study	ITRW213 and ITRW225/ CMPG 213 and CMPG223

Time Schedule

Activity	Weeks	Hours/week	Total
Class (contact time)	12	1	12
Self-study and preparation	12	3	36
Tests and preparation	2	6	12
Project (Examination and preparation)	12	5	60
Total			120

Study material

Prescribed textbook

Information Technology Project Management – Kathy Schwalbe
9th edition
Published by Course Technology
ISBN-13:978-1-337-10135-6

Class attendance

Class attendance forms a central part of this module. It is essential that all classes are attended.

Work method

Self-activity is extremely important in this course. The study guide provides you with a framework of the work for the semester. It is expected of you to carefully work through the work and to complete the assignments that are given before each class. The lecturers act as facilitators in the course, and during class periods the problems that students experience with the work and the assignments will be discussed. Students are welcome to present queries to the lecturer in the form of an e-mail.

Evaluation

You will be tested in various ways throughout the semester to determine whether you have attained the outcomes.

Homework assignments

- Students will receive self study assignments weekly.
- Learning is a cumulative process and new knowledge builds on prior knowledge. Therefore the assignments are essential to ensure that the outcomes have been mastered for each part of the work.
- Assignments are submitted at the beginning of the next class opportunity. Only hard copies are accepted. No late assignments will be accepted. Electronic copies to be submitted on eFundi.

Tests

- Tests, as applicable, will be written on scheduled times during the semester.

Practical project

- Students will, divided into different groups, receive a practical project which has to be completed during the semester.
- During this project the theoretical principles that were dealt with, will be applied on a realistic case study. Furthermore, it will be expected from students to obtain information on new topics that came forward in the project.
- Students will thus individually, and as a group receive practical project deliverables that has to be completed during the course of the semester.

Participation mark

In order to gain permission to the exam, students should comply with the following:

- All assignments must be submitted. The average mark for the assignments must be at least 50%.
- All practical deliverables are compulsory. Students must attain a minimum mark of 50% for the project deliverables.
- All test are taken into account when the participation mark is calculated.
- **Individual:** Your individual mark is determined by your contribution to class discussions, scores achieved in class tests and individual assignments (the writing of an article). Your contribution to class discussions will be determined by a “buddy rating” system where you will receive a rating from your peers regarding your contribution, given your allocated role, in the development of the Exam Artefact, Project Plan, and Tender

Response Document. It is thus cardinal that all work be distributed evenly and fairly between all group members, in the delivery of all deliverables. Your mark is a reflection of your contribution, measured by peer group members, to all group assignments. It is therefore stressed that “no free riding” will be tolerated.

- **Group:** Group work will be assessed according to scores achieved in the Tender Response Document(s), Project Charter Document(s) as well as other specified project deliverables.

The participation mark will be estimated roughly as follows:

Class Presentation and Participation, Individual Assignment(s), Buddy rating, Test scores	30
Tender Response Document	30
Project deliverables	40

Examination

The exam mark (group) will be determined by the score achieved in the final Project Deliverable and Artefact. You will also achieve an individual mark for your participation AND contribution in the development of the exam artefact.

Final Deliverable and Artefact ^a	100
Team evaluation of active participation ^b	% out of 100
Exam Mark	$a \times b$

Final mark

The final mark will approximately be calculated as follows:

Participation mark	50
Examination	50

Tips to pass this module

- Be prepared for each period. Do ALL of the assignments beforehand and name the problems that you experienced in this regard to the lecturer during the period.
- Actively participate in the discussions. The lecturer does not give a formal lecture, but rather leads discussion about topics that are addressed in the study unit.
- Start working on the practical (Exam) project from the beginning of the semester. The range of the project is quite large and you will not be successful if you only start working a week or two before the due date.
- If you struggle or do not achieve the desired results, be sure to do a lot of additional exercises. You can find such exercises at the end of chapters as well as on the website of the textbook at www.cengagebrain.com.

- Students that have successfully completed this course qualify to write an international certified examination. The CAPM (Certified Associate in Project Management) is managed by PMI (Project Management Institute). You can find more information about this examination at www.pmi.org.

Work programme

WEEK	STUDY UNIT	TOPIC
1	1	Introduction to Project Management Project Management in the IT Context
2	2	Project Management Process Groups
3	3	Project Integration Management
4	4	Project Scope Management
5	5	Project Time Management
6	6	Project Cost Management
7	7	Project Quality Management
8	8	Project Human Resources Management
9	9	Project Communication Management
10	10	Project Risk Management
11	11	Project Procurement Management
12	12	Project Stakeholder Management
13	-	Submit Practical Project

Module outcomes

Purpose:

To provide the learner with sound knowledge and practical experience of basic project management skills in the IT environment. The purpose of this course is to prepare students for a course in project management.

Knowledge:

After the completion of this module, students should be able to:

- Understand and apply project management in the IT context;
- understand and manage project management process groups;
- understand and apply project integration management;
- understand and apply scope management;
- understand and apply time management;
- understand and apply cost management;
- understand and apply quality management;
- understand and apply human resources management;
- understand and apply communication management;

- understand and apply risk management;
- understand and apply procurement management; and
- understand and apply project stakeholder management.

Skills:

Students will be able to plan and manage a large IT project. The skills that are acquired will enable the student to complete the international CAPM certified examination with PMI.

Textbook website

The publishers of the textbook have created a website with helpful references, explanations and additional problems. Do make use of it during your preparation and the practical project.

www.cengagebrain.com

Action verbs

Question, whether in tests or examinations, always contain certain key or action verbs. Students have to know what the action verbs mean and what is expected of them when answering the question. In view of this, a short list is provided below providing such verbs. A brief description of the action verbs with a high frequency of use in question papers will make the list even more applicable.

- **Name**

Here only the facts are written down briefly and professionally.

- **Describe**

In this case performance is expected on the knowledge level. Attributes, facts or results are related in a logical, well structured manner. No commentary or arguments are necessary.

- **Define**

Knowledge reproduction is required. It is a clear, terse and authoritative description of a concept so that its meaning is clear.

- **Give an overview**

A large volume of knowledge has to be summarised and gathered in a logical and systematic manner without losing the essence of the issue.

- **Explain**

The issue is stated in a simple manner so that the reader can understand it. In this case illustrations, descriptions and examples have to be used while reasons are also given for statements and results.

- **Prove**

Confirm the facts through the logical arguing of acceptable facts.

- **Compare**

This question has to be handled with care. You are not to describe or discuss the one issue and then the other. Facts, events or problems are set against each other and the similarities and differences are brought to the fore.

- **Discuss**

This type of question assumes insight and discerning ability when making an application and evaluation. In this case the various aspects of the topic or statement are examined and stated in an analytical manner.

- **Analyse**







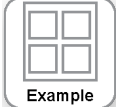

The content is divided into parts or elements and discussed. Causes and consequences are determined and mutual relations are established.

- **Evaluate**

In evaluation it is expected that an issue is assessed on the basis of certain criteria. A value assessment is expressed with regard to the issue and it has to be motivated.

Where necessary, lecturers will also provide further information about these (and other relevant terms) in class. However, for your own benefit it is important to know beforehand what is expected of you when such an action verb appears in a question paper.

Icons

	Time allocation		Learning outcomes
	Study material		Assessment / Assignments
	Individual exercise		Group Activity
	Example		Reflection

Warning against plagiarism

ASSIGNMENTS ARE INDIVIDUAL TASKS AND NOT GROUP ACTIVITIES. (UNLESS EXPLICITLY INDICATED AS GROUP ACTIVITIES)

Copying of text from other learners or from other sources (for instance the study guide, prescribed material or directly from the internet) is **not allowed** – only brief quotations are allowed and then only if indicated as such.

You should **reformulate** existing text and use your **own words** to explain what you have read. It is not acceptable to retype existing text and just acknowledge the source in a footnote – you should be able to relate the idea or concept, without repeating the original author to the letter.

The aim of the assignments is not the reproduction of existing material, but to ascertain whether you have the ability to integrate existing texts, add your own interpretation and/or critique of the texts and offer a creative solution to existing problems.

Be warned: students who submit copied text will obtain a mark of zero for the assignment and disciplinary steps may be taken by the Faculty and/or University. It is also unacceptable to do somebody else's work, to lend your work to them or to make your work available to them to copy – be careful and do not make your work available to anyone!

For the NWU link for plagiarism, go to http://www.nwu.ac.za/webfm_send/25355

Study unit 1

INTRODUCTION TO PROJECT MANAGEMENT

Study time



It should take you approximately 2 hours to successfully work through this study unit.

Study material



This study unit is based on Chapter 1 of the textbook.

Study outcomes



At the end of this study unit you should be able to:

- Understand the growing need for better project management, especially for IT projects;
- explain what a project is, provide examples of IT projects, name various attributes of projects and describe the triple constraint of projects;
- describe project management as well as key elements of the project management framework;
- discuss the relationship between project, program, and portfolio management and the contributions they each make to enterprise success;
- understand the role, skills and career possibilities of IT project managers; and
- describe the project management profession as well as the role played by professional organisations.

Study the following attentively

Prepare from the textbook:

- Discussion on what a project is on pages 4-9. Make sure about the following:
 - ☐ How an IT project differs from other projects in society.
 - ☐ Attributes of a project. Now try to define a project with the aid of these attributes.
 - ☐ That you understand the triple constraint (scope, time and cost) that always has an influence on a project.

- Discussion on what project management is on pages 9-16. Figure 1-2 is a presentation of a project management framework. It is extremely important that you understand this framework properly. It forms the basis of the discussion in the rest of the textbook. This framework includes the following elements:
 - ☐ Stakeholders in a project.
 - ☐ Project management knowledge areas. (NB!)
 - ☐ Project management tools and techniques.
 - ☐ Project portfolio management.
 - ☐ Project success factors.
- Program and project portfolio management on pages 17-22.
 - ☐ The role of project managers on pages 22-27. In this section, the following is explained:
 - ☐ What a project manager does.
 - ☐ The skills that a project manager needs. Table 1-3 indicates the ten most important skills and competencies for project managers.
 - ☐ The career possibilities that exist. Project management is listed as one of the top 10 IT skills that are in demand today.
 - ☐ The project management profession on pages 27-36.
- The case study explains many of the concepts that are discussed in the chapter.

Individual activity



Complete the assignments indicated by your lecturer.

Feedback and answers

The memorandum is discussed when the lecturer returns the exercises.

Study unit 2

PROJECT MANAGEMENT IN THE IT CONTEXT

Study time



You will need approximately 2 hours to successfully work through this study unit.

Study material



This study unit is based on Chapter 2 of the textbook.

Study outcomes



At the end of this study unit you should be able to:

- Describe the system view of project management and apply it to IT projects;
- understand organisations, including the four frames for organisations, organisation structures and organisation culture;
- explain why stakeholder management and top management support is critical to the success of a project;
- understand what a project phase and project life cycle are and differentiate between project development and product development;
- discuss the unique attributes and divergent nature of IT projects; and
- describe recent trends affecting IT project management, including globalization, outsourcing, virtual teams, and agile project management.

Study the following attentively

Prepare from the textbook:

- System view of project management on pages 45-47. Make sure about the following:
 - ☐ What is the system approach?
 - ☐ The three-sphere model of system management (business, organisation and technology). It is beautifully illustrated in Fig 2-1.
- Discussion on what organisation is on pages 47-52. This discussion includes the following:

- ☐ Four frames of organisations, namely structural, human resources, political and symbolic frameworks. Make sure that you understand it well and that you can apply it to a practical example.
- ☐ Organisation structures. It is nicely illustrated in Fig 2-3.
- ☐ Organisation culture. The ten attributes of organisation culture are very important.
- Stakeholder management on pages 52-56. Make sure you can explain why top management support is so important for a project manager.
- Project phases and the project life cycle on pages 56-63. This includes:
 - ☐ Discussion of project phases in the traditional project life cycle. Make sure you can explain it on the basis of Fig 2-4.
 - ☐ Product life cycle. The product is created during the implementation phase in the project life cycle. In an IT project, this product is the software being developed. During the development of the software, the life cycle of a product is followed. It can be any one of the various system development life cycles that are discussed in the textbook. Make sure that you can properly distinguish between a project life cycle and a product life cycle.
 - ☐ Importance of project phases and management reviews.
- Context of IT projects on pages 64-65. The nature of IT projects, the attributes of IT project team members and the variety of technologies are discussed.
- Modern trends affecting Information Technology project management on pages 65 – 72:
 - ☐ Globalization
 - ☐ Outsourcing
 - ☐ Virtual teams
 - ☐ Agile project management
- The case study explains many of the concepts that are discussed in the chapter.

Individual activity



Complete the assignments indicated by your lecturer.

Feedback and answers

The memorandum will be discussed when the lecturer returns the exercises.

Study unit 3

PROJECT MANAGEMENT PROCESS GROUPS

Study time



You will need approximately 2 hours to successfully work through this study unit.

Study material



This study unit is based on Chapter 3 of the textbook.

Study outcomes



At the end of this study unit you should be able to:

- Describe what the five project management process groups are, what the typical level of activity for each one is as well as the interaction between them;
- understand how the process management process groups are related to the project management knowledge areas; and
- explain how organisations develop IT project management methodologies to meet their needs.

Study the following attentively

Prepare from the textbook:

- The project management process groups on pages 80-84. Keep the following in mind in order to thoroughly understand this section:
 - ☐ The following project phases exist: Concept, development, implementation and close-out. (See the previous chapter).
 - ☐ The five process groups are found within each of the above-mentioned phases: initiation, planning, execution, control and closing.
- Linking of process groups to the knowledge areas on pages 85-86. Table 3-1 sums it up nicely.
- Development of IT project management methodologies on pages 86-89.

- Case study on pages 89-117. This case study (predictive approach) will be able to help you a lot with the practical project. It indicates the most important steps and executions for each process group. Tables and figures are very important.
- Case study on pages 117-126. This case study (agile approach) will help a lot with the practical project.
- List of templates on pages 126-129. You are going to use this a lot during the semester.

Individual activity



Complete the assignments indicated by your lecturer.

Feedback and answers

The memorandum will be discussed when the lecturer returns the exercises.

Study unit 4

PROJECT INTEGRATION MANAGEMENT

Study time



You will need approximately 2 hours to successfully work through this study unit.

Study material



This study unit is based on Chapter 4 of the textbook.

Study outcomes



At the end of the study unit you should be able to:

- Discuss the general framework for project integration management as well as the relation it has to the other project management knowledge areas and the project life cycle;
- explain the strategic planning process and apply various project selection methods;
- explain why it is important to develop a project charter in order to formally initiate projects;
- describe how project management plan development has to be done, including stakeholder analysis that aids in the management of relationships;
- explain project execution, the relation between it and project planning as well as factors that are related to successful results;
- describe the process of monitoring and control of project work;
- understand how the integrated changes control process works, how to plan for changes in IT projects and manage these changes as well as how to develop and use a change control system;
- explain the importance of following good procedures for project closing and development; and
- explain how software can help with project integration management.

Study the following attentively

Prepare from the textbook:

- Explanation of what project integration is on pages 137-141. It is important that you know the six main processes of project integration management. It is summarised later in the chapter in Fig 4-1.
- Strategic planning and project selection on pages 141-154. It includes:
 - ☐ Identification of potential projects.
 - ☐ Aligning IT with business strategy.
 - ☐ Methods for selecting projects, namely:
 - Focus on broad organisational needs.
 - Categorisation of IT projects.
 - NPV analysis, ROI and Payback analysis.
 - Weighted scoring model.
 - Balanced scorecard.
- Project charter on pages 155-158.
- Project management planning on pages 158-162. Take note of the following:
 - ☐ Make sure that you know exactly what the content of a typical project management plan is. It usually includes the following:
 - An overview or introduction of the project.
 - Description of how the project will be organised.
 - Description of management and technical approaches that will be followed.
 - Work that will be done.
 - Project schedule.
 - Project budget.
 - ☐ Guidelines that can be followed to set up project management plans.
- Project directing and managing on pages 162-166. Take note of the following:
 - ☐ Project planning and project execution are often viewed as though they are intertwined and not as separate activities. You as project manager will therefore have to coordinate these two activities.
 - ☐ During project execution you will have to provide strong leadership and a supportive culture.
 - ☐ You have to capitalise on your knowledge of the project, the business and the application area.
 - ☐ There are various automated tools and techniques that you can use during your project execution.
- Monitoring and control of project work on pages 166-168.
- Integrated changes control on pages 168-172. Take note of the following:
 - ☐ Make sure you know the three goals of integrated changes control.
 - ☐ How changes control is handled in IT projects.
- Project closing on pages 172.
- Use of software in this phase: page 172.

Individual activity



Complete the assignments indicated by your lecturer.

Feedback and answers

The memorandum will be discussed when the lecturer returns the exercises.

Study unit 5

PROJECT SCOPE MANAGEMENT

Study time



You will need approximately 2 hours to successfully work through this study unit.

Study material



This study unit is based on Chapter 5 of the textbook.

Study outcomes



At the end of this study unit you should be able to:

- Explain why project scope management is important;
- explain the scope planning process and describe the content of a scope management plan;
- discuss methods for collecting and documenting requirements to meet stakeholder needs and expectations;
- describe the scope definition process as well as the construction of a work breakdown structure;
- discuss the process for creating a work breakdown structure using the analogy, top-down, bottom-up, and mind-mapping approaches;
- explain why scope validation is important and how it is related to the scope definition and control;
- understand why scope control is important and which approaches can be followed in order to prevent scope related problems in IT projects; and
- explain how software can be used in project scope management.

Study the following attentively

Prepare from the textbook:

- Explanation of what project scope management is on pages 183-184. Make sure that you can clearly differentiate between the six main processes that are involved during project scope management, namely:
 - ☐ Scope planning.
 - ☐ Collecting requirements.
 - ☐ Scope definition.
 - ☐ Creation of work breakdown structure.
 - ☐ Scope verification.
 - ☐ Scope control.
- Scope planning and the scope management plan on pages 186-187.
- Collecting requirements on pages 188-191.
- Scope definition and the project scope statement on pages 191-194.
- Creation of the work breakdown structure on pages 194-205. Take note of the following:
 - ☐ The work breakdown structure can be organised according to product (Fig 5-3), or phases in table format (Table 5-4).
 - ☐ There are various different approaches that can be followed in order to set up the work breakdown structure, namely:
 - Guidelines.
 - Analogue approach.
 - Top-down approach.
 - Bottom-up approach.
 - Mind mapping approach.
- Scope verification on pages 205-207.
- Scope control on pages 207-210. Take note of the following:
 - ☐ Suggestions on how to improve user input.
 - ☐ Suggestions on how to decrease incomplete and changing requirements.
- Software use in this phase: page 210-211.

Individual activity



Complete the assignments indicated by your lecturer.

Feedback and answers

The memorandum will be discussed when the lecturer returns the exercises.

Study unit 6

PROJECT TIME MANAGEMET

Study time



You will need approximately 2 hours to successfully work through this study unit.

Study material



This study unit is based on Chapter 6 of the textbook.

Study outcomes



At the end of this study unit you should be able to:

- Understand the importance of project schedules and good project time management;
- define activities that can serve as the basis for the development of project schedules;
- describe how project managers use network diagrams and dependencies to aid them during activity organisation;
- understand the relation between the estimation of resources and project schedules;
- explain how various tools and techniques can help project managers to make activity duration estimates;
- explain how reality checks and discipline are involved during the control and management of changes to the project schedule; and
- critically evaluate the use of project management software during project time management.

Study the following attentively

Prepare from the textbook:

- The importance of project schedules on pages 221-225. Make sure that you can clearly differentiate between the seven main processes that are involved during project time management, namely:
 - ☐ Planning schedule management.
 - ☐ Activity definition.

- ☐ Activity sequencing.
- ☐ Activity resource estimation.
- ☐ Activity duration estimation.
- ☐ Schedule development.
- ☐ Schedule control.
- Planning schedule management on page 225.
- Activity definition on pages 225-228.
- Activity sequencing on pages 228-232. Make sure about the following:
 - ☐ The three reasons why it is necessary to create dependencies between project activities.
 - ☐ The use of network diagrams.
 - ☐ The use of precedence diagrams.
- Activity resource estimation on pages 232-233.
- Activity duration estimation on pages 233-234. Make sure that you understand what is meant by the duration of an activity and the effort of an activity.
- Schedule development on pages 234-248. Various tools and techniques that can be used to do schedule development are discussed. Make sure you know them well and that you can apply them. They include:
 - ☐ Gantt charts. Take note of the use of milestones and the SMART criteria.
 - ☐ Critical path method. Fig 6-9 is important. Take note of the calculation of ES, EF, LS and LF.
 - ☐ Critical chain scheduling.
 - ☐ PERT technique.
- Schedule control on pages 248-250. Project managers need various leadership skills during the control of schedule changes. These include:
 - ☐ Empowerment.
 - ☐ Incentives.
 - ☐ Discipline.
 - ☐ Negotiation.
- The use of software during project time management on pages 250-252.

Individual activity



Complete the assignments indicated by your lecturer.

Feedback and answers

The memorandum will be discussed when the lecturer returns the exercises.

Study unit 7

PROJECT COST MANAGEMENT

Study time



You will need approximately 2 hours to successfully work through this study unit.

Study material



This study unit is based on Chapter 7 of the textbook.

Study outcomes



At the end of this study unit you should be able to:

- Understand the importance of project cost management;
- explain basic project cost management principles, concepts and terms;
- discuss different types of cost estimations and methods;
- understand and apply the COCOMO model;
- understand the processes involved during cost budgeting and the preparation of a cost estimation and budget of an IT project;
- understand the advantages of EVM and project portfolio management during cost control; and
- critically evaluate the use of project management software during project cost management.

Study the following attentively

Prepare from the textbook:

- The importance of project cost management on pages 263-268. Make sure that you can clearly differentiate between the four main processes involved during project cost management, namely:
 - ☐ Planning cost management.
 - ☐ Cost estimation.
 - ☐ Cost budgeting.
 - ☐ Cost control.

- Basic principles of cost management on pages 268-270.
- Planning of cost management on pages 270-271.
- Cost estimation on pages 271-280. Make sure about the following:
 - ☐ Types of cost estimations. These include rough order of magnitude estimations, budgeted estimations and definitive estimations. Tables 7-1 and 7-2 are important.
 - ☐ Cost estimation tools and techniques. These include analogue (top-down) estimations, bottom-up estimations and parameter modelling.
 - ☐ Typical problems during IT cost estimations.
 - ☐ Example of cost estimation. This example will be of great help in better understanding the chapter.
- Cost budgeting on pages 281-282.
- Cost control on pages 282-289. Take note of the following:
 - ☐ EVM (Earned Value Management): You are expected to know this technique well and be able to apply it. It is also very important that you can interpret the results of this technique, in other words, you have to know what the answers mean.
 - ☐ Project portfolio management.
- The use of software during project cost management on pages 289-290.

Individual activity



Complete the assignments indicated by your lecturer.

Feedback and answers

The memorandum will be discussed when the lecturer returns the exercises.

Study unit 8

PROJECT QUALITY MANAGEMENT

Study time



You will need approximately 2 hours to successfully work through this study unit.

Study material



This study unit is based on Chapter 8 of the textbook.

Study outcomes



At the end of this study unit you should be able to:

- Understand the importance of project quality management for IT products and services;
- define project quality management and understand how quality is related to various aspects of IT projects;
- discuss quality planning as well as its relation to project scope management;
- discuss the importance of quality assurance;
- explain the main outputs of the quality control process;
- understand the tools and techniques that can be used during quality control;
- summarise the contributions of well-known quality experts to modern quality management;
- describe how leadership, cost of quality, organisation influences, expectations, cultural differences and maturity models are related to the improvement of quality in IT projects; and
- critically evaluate the use of project management software during project quality management.

Study the following attentively

Prepare from the textbook:

- The importance of project quality management on pages 300-302.
- What project quality management is on pages 302-303. Make sure that you can clearly differentiate between the three main processes that are involved during project quality management, namely:
 - ☐ Quality planning.
 - ☐ Quality assurance.
 - ☐ Quality control.
- Quality planning on pages 304-305. Make sure that you are able to discuss the impact of important scope aspects of IT projects that can influence quality. These include:
 - ☐ Functionality.
 - ☐ System outputs.
 - ☐ Work performance.
 - ☐ Reliability.
 - ☐ Maintainability.
- Quality assurance on pages 306-307.
- Quality control on pages 307-308. Take note of the following:
 - ☐ The main outputs of the quality control process, namely acceptance decisions, rework and process adjustments.
- Tools and techniques for quality control on pages 308-322. You have to understand these techniques well and be able to apply them in an IT project. They include:
 - ☐ Seven basic tools of quality.
 - ☐ Statistical sampling.
 - ☐ Six Sigma principles.
 - ☐ Testing.
- Modern quality management on pages 322-326. Various experts have made important contributions to modern quality management. Make sure that you can explain each expert's contribution. These experts include:
 - ☐ Deming.
 - ☐ Juran.
 - ☐ Crosby.
 - ☐ Ishikawa.
 - ☐ Taguchi.
 - ☐ Feigenbaum.
 - ☐ Malcolm Baldrige award
 - ☐ ISO standards.
- Improvement of IT project quality on pages 326-333. There are various factors that have an influence on the quality of IT projects. It is very important that you know these factors very well. They include:
 - ☐ Leadership.
 - ☐ Cost of quality.
 - ☐ Organisational influences and work place factors.

- ☐ Expectations and cultural differences.
- ☐ Maturity models.
- The use of software during project quality management on page 333.

Individual activity



Complete the assignments indicated by your lecturer.

Feedback and answers

The memorandum will be discussed when the lecturer returns the exercises.

Study unit 9

PROJECT HUMAN RESOURCES MANAGEMENT

Study time



You will need approximately 2 hours to successfully work through this study unit.

Study material



This study unit is based on Chapter 9 of the textbook.

Study outcomes



At the end of this study unit you should be able to:

- Understand the importance of proper human resource management for IT projects;
- define project human resources management as well as the processes that are involved in it;
- know and understand the most important theories and concepts with regard to the management of people;
- discuss and apply human resource planning;
- understand the most important issues with regard to personnel recruitment for IT projects;
- effectively get involved in team building activities;
- explain various tools and techniques that can be used to manage a project team; and
- critically evaluate the use of project management software during project human resources management.

Study the following attentively

Prepare from the textbook:

- The importance of human resources management on pages 344-347. Interesting information about the current state of human resources management in the IT environment is provided in this section. The implications of it on human resource management in the future are also looked at.
- What project human resources management is in pages 347-348. Make sure that you can clearly differentiate between the four main processes that are involved during project human resources management, namely:
 - ☐ Human resource planning.
 - ☐ Acquiring the project team.
 - ☐ Development of the project team.
 - ☐ Management of the project team.
- Key information regarding the management of people on pages 348-359. This section is very important and you will also need it often in the future. Make sure that you know the following theories and that you can apply it in the IT environment:
 - ☐ Theories regarding motivation of people by:
 - Abraham Maslow: Hierarchy of needs. Fig 9-2 is important.
 - Frederick Herzberg: Motivation-hygiene theory.
 - David McClelland: Acquired needs theory.
 - Douglas McGregor: Theory X and Theory Y.
 - ☐ Theory regarding the influence of workers, reduction of conflict and power by:
 - HJ Thamhain and DL Wilemon. Take note of the different types of power that a project manager has at his/her disposal.
 - ☐ Theory with regard to effectiveness of people and teams by:
 - Stephen Covey. You have to be able to apply the seven principles of effectiveness to an IT project.
- Human resources planning on pages 359-364. The following are aspects that are used during human resources planning:
 - ☐ Project organisation charts (Fig 9-3).
 - ☐ Responsibility assignment matrixes (Fig 9-5, 9-6, Table 9.2).
 - ☐ Personnel management plans and resource histograms (Fig 9-7).
- Acquiring the project team on pages 364-369. During this recruitment of the project team, the following aspects will be given attention:
 - ☐ Resource assignment.
 - ☐ Resource loading.
 - ☐ Resource leveling. Look at the example in Fig 9-8.
 - Development of the project team on pages 369-375. Take note of the following:
 - ☐ The Tuckman model for team development.
 - ☐ Training.
 - ☐ Team building exercises.
 - You have to be familiar with the Myers-Briggs personality type indicator and be able to apply it to your team members.

- Furthermore you have to know and be able to apply the social style profile that was developed by David Merrill.
 - Reward and recognition systems.
- Management of the project team on pages 375-379. Take note of the following:
 - ☐ Tools and techniques that can be used during the management of the project team.
 - ☐ General advice regarding the management of teams.
- The use of software during the project human resources management on pages 379-380.

Individual activity



Complete the assignments indicated by your lecturer.

Feedback and answers

The memorandum will be discussed when the lecturer returns the exercises.

Study unit 10

PROJECT COMMUNICATION MANAGEMENT

Study time



You will need approximately 2 hours to successfully work through this study unit.

Study material



This study unit is based on Chapter 10 of the textbook.

Study outcomes



At the end of this study unit you should be able to:

- Understand the importance of good communication management in IT projects;
- review key concepts related to communication;
- explain the elements of planning project communications and how to create a communications management plan;
- describe how to manage communications, including communication technologies, media, and performance reporting;
- discuss methods for controlling communications to ensure that information needs are met throughout the life of the project;
- know various methods to improve project communication; and
- critically evaluate the use of software during project communication management.

Study the following attentively

Prepare from the textbook:

- The importance of project communication management on pages 390-392. Make sure that can clearly differentiate between the three main processes that are involved during project communication management, namely:
 - ☐ Communication planning.
 - ☐ Managing communications.
 - ☐ Controlling communications.

- Keys to good communications on pages 392-397.
- Communication planning on pages 398-399. Table 10-1 is important.
- Managing communications on pages 399-404. Take note of the following:
 - ☐ The use of technology to enhance the distribution of information.
 - ☐ The selection of the appropriate communication medium. Table 10-2 is important.
- Controlling communications on pages 404-405.
- Suggestions with regard to improving project communication on pages 405-414. Valuable tips about the following aspects are discussed:
 - ☐ The development of better communication skills.
 - ☐ Running effective meetings.
 - ☐ Effective use of e-mail.
 - ☐ The use of templates for project communication.
- The use of software during project communication management on pages 414-416.

Individual activity



Complete the assignments indicated by your lecturer.

Feedback and answers

The memorandum will be discussed when the lecturer returns the exercises.

Study unit 11

PROJECT RISK MANAGEMENT

Study time



You will need approximately 2 hours to successfully work through this study unit.

Study material



This study unit is based on Chapter 11 in the textbook.

Study outcomes



At the end of this study unit you should be able to:

- Understand what risk is as well as the importance of good risk management in IT projects;
- explain which elements are involved in risk management planning;
- describe the general sources of risk in IT projects;
- explain the risk identification process;
- explain the qualitative risk analysis process;
- explain the quantitative risk analysis process;
- provide examples of how to use different risk reaction planning strategies to address both positive and negative risks;
- explain what risk monitoring and control involve; and
- critically evaluate the use of project management software during project risk management.

Study the following attentively

Prepare from the textbook:

- The importance of project risk management on pages 426-433. Make sure that you can clearly differentiate between the six main processes that are involved during project risk management, namely:
 - ☐ Risk management planning.
 - ☐ Risk identification.

- ☐ Qualitative risk analysis.
- ☐ Quantitative risk analysis.
- ☐ Risk response planning.
- ☐ Risk monitoring and control.
- Risk management planning on pages 433-434. Table 11-2 is important.
- Common sources of risk in IT projects on pages 434-438.
- Risk identification on pages 438-442.
 - ☐ In this section, various suggestions are discussed on how to identify risks, namely:
 - Brainstorming.
 - Delphi technique.
 - Interviews.
 - Checklists.
 - Testing of assumptions.
 - Setting up diagrams.
 - Make sure that you know what is meant by the term “risk register” and which items are contained in it. You can find an example in Table 11-5.
- Qualitative risk analysis on pages 442-447. Take note of the following:
 - ☐ Probability/impact matrixes to calculate risk factors.
 - ☐ Top 10 risk item tracking.
- Quantitative risk analysis on pages 447-452. Take note of the following:
 - ☐ Decision trees and EMV.
 - ☐ Simulation.
 - ☐ Sensitivity analysis.
- Risk response planning on pages 452-454. Make sure that you can differentiate between the basic response strategies that are available with negative and positive risks.
- Risk monitoring and control on page 454.
- The use of software during project risk management on pages 455-456.

Individual activity



Complete the assignments indicated by your lecturer.

Feedback and answers

The memorandum will be discussed when the lecturer returns the exercises.

Study unit 12

PROJECT PROCUREMENT MANAGEMENT

Study time



You will need approximately 2 hours to successfully work through this study unit.

Study material



This study unit is based on Chapter 12 of the textbook.

Study outcomes



At the end of this study unit you should be able to:

- Understand the importance of good project procurement management for IT projects;
- describe the tasks that have to be performed during the planning of purchases;
- describe the tasks that have to be performed during the planning of contracts;
- understand the process of request of seller responses;
- describe what the seller selection process involves as well as the different approaches that can be followed to evaluate proposals and select suppliers;
- discuss the importance of good contract administration;
- describe the contract closure process; and
- critically evaluate the use of project management software during project purchases management.

Study the following attentively

Prepare from the textbook:

- The importance of project procurement management on pages 466-471. Make sure that you can clearly differentiate between the four main processes involved during project procurement management, namely
 - ☐ Planning of procurement management.
 - ☐ Conducting procurements.
 - ☐ Controlling procurements.
 - ☐ Closing procurements.
- Planning of procurement management on pages 471-481. Take note of the following:
 - ☐ Types of contracts
 - ☐ Techniques and tools that can be used to plan purchases and procurements include:
 - Make or buy analysis.
 - Expert judgment.
 - Market research.
 - ☐ Procurement management plan
 - ☐ Statement of work
 - ☐ Procurement documents
- Conducting procurements on pages 481-483.
- Controlling procurements on pages 483-484.
- Closing procurements on pages 484-485.
- The use of software during project procurement management on pages 485-487.

Individual activity



Complete the assignments indicated by your lecturer.

Feedback and answers

The memorandum will be discussed when the lecturer returns the exercises.

Study unit 13

PROJECT STAKEHOLDER MANAGEMENT

Study time



You will need approximately 2 hours to successfully work through this study unit.

Study material



This study unit is based on Chapter 13 of the textbook.

Study outcomes



At the end of this study unit you should be able to:

- Understand the importance of project stakeholder management throughout the life of a project;
- discuss the process of identifying stakeholders, how to create a stakeholder register, and how to perform a stakeholder analysis;
- describe the contents of a stakeholder management plan;
- understand the process of managing stakeholder engagement and how to use an issue log effectively;
- explain methods for controlling stakeholder engagement;
- critically evaluate the use of project management software during project stakeholder management.

Study the following attentively

Prepare from the textbook:

- The importance of project stakeholder management on pages 496-498. Make sure that you can clearly differentiate between the four main processes involved during project stakeholder management, namely
 - ☐ Identifying stakeholders.
 - ☐ Planning stakeholder management.
 - ☐ Managing stakeholder engagement.
 - ☐ Controlling stakeholder engagement.
- Identifying stakeholders on pages 498-502. Fig. 13-2 is very important, since you will use it a lot future.
- Planning of stakeholder management on pages 502-503. Take note of Table 13-2 where an example of a stakeholder analysis provided.
- Managing stakeholder engagement on pages 503-506. Take note of the following:
 - ☐ Expectations management matrix.
 - ☐ Issue log.
- Controlling stakeholder engagement on pages 506-508.
- The use of software during project procurement management on pages 508-510.

Individual activity



Complete the assignments indicated by your lecturer.

Feedback and answers

The memorandum will be discussed when the lecturer returns the exercises.